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CLINICAL RESEARCH STUDIES

From the Southern Association for Vascular Surgery

Presidential address: Thirteen days in May

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For many years, I have sat in audiences like this and listened to past Presidents of this Society describe how proud, how honored, and how moved they were to deliver their Presidential address to the Southern Association for Vascular Surgery. I feel the same way, and I can assure you that words cannot adequately convey how I feel at this moment, looking down upon my greatest gift, my family, but I can assure you, it is a moment I will cherish forever. Past Presidents have addressed you on topics they hold particularly dear—the forces that drive them, shape them, and give them the greatest gratification. In my adult life, these forces have been my passion for athletics and my love of the operating room.

Athletics is the great equalizer among all men. Formal education, family lineage, and personal assets all go out the window when you "strap it on" and cross the sideline, step onto the court, or climb onto a starting block and rise to the occasion. And once competition begins, there are those athletes whose accomplishments singe the air with their brilliance, defining that individual for all time. When critics called him "a terrified boy, fighting a man," Mohammad Ali, then known as Cassius Clay, knocked out Sonny Liston. When long-jumpers had not yet jumped 28 ft, Bob Beamon in the rarified air of Mexico City took off for a place in track-and-field history and leaped past 28 ft, to an astounding 29 ft 2½ in, more than a foot over the record, and collapsed over the enormity of his achievement. When no one had ever won five Gold medals in an Olympic Games, Mark Spitz won seven, the highest any Olympic competitor has won for any sport at a single Games, and set seven world records! And what of those high school and college boys who in 1980 beat a Russian National Team, who 1 year earlier had beaten the National Hockey League All Stars?

Competition of interest: nil.
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These historic achievements are all very special, but one moment that crystallized all that is good and all that is liberating in sports was Roger Bannister's breaking of the impenetrable 4-minute mile. To my mind, this was the most inspiring athletic feat of the past half century, because no one, with the exception of Bannister, believed it could be done and because it was accomplished by an amateur athlete who, through perseverance, dedication, and deep commitment to his goal, did the impossible.

Like the athlete who steps onto the field of athletic competition, when we, as surgeons, put on our uniform and step to the operating table, we must rise to the challenge and strive for perfection through commitment, dedication, and perseverance. Like the great athletes whose inspiring exploits live forever in the history of athletics, there are surgeons whose accomplishments in the operating room were so brilliant that they forever shine in the history of surgery. These are the giants on whose shoulders we stand today.

They have taught us time and again that there really are no limits to human achievement. Think about some of these men. In 1947, when the only treatment for an ischemic limb was sympathectomy or amputation, Sid Dos Santos[1] opened new horizons by reestablishing blood flow to an occluded extremity with the first successful femoral endarterectomy. When fellow surgeons told Charles Dubost (Dubost, Allary, and Oeconomos[2]) in 1951 that it was impossible to replace an aneurysm of the abdominal aorta, he was not listening; he was thinking how he could perform an aortic homograft. And more recently, when we first heard that an Argentinean named Juan Parodi (Parodi, Palmaz, and Barone[3]) excluded an aortic aneurysm through a femoral artery approach, who in this room believed it? Like Bannister's incredible run, one simple, yet elegant, operation, reported first by Eastcott, Pickering, and Rob,[4] is especially significant because it defined vascular surgery. Until publication of their successful reconstruction of the internal carotid artery, no one really believed an operation could prevent stroke.

By fascinating coincidence, the 4-minute mile and the report of the first successful carotid operation both involved men of medicine, happened within a short distance of each other in London, England, and took place within a span of 13 days in May 1954. The history and lore surrounding the

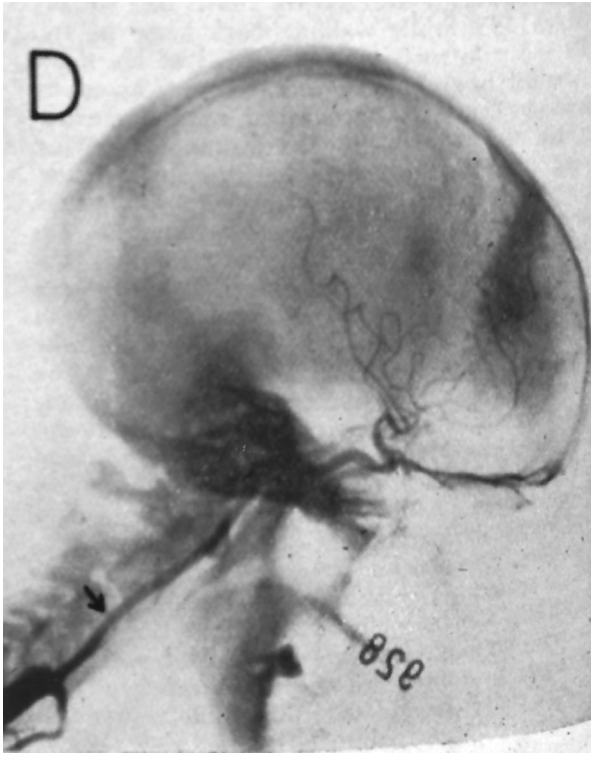

Fig 1. Postoperative arteriogram. *Arrow* points to area of carotid-carotideal anastomosis. (From Acta Neurologica Latino Am 1955; 1:71-8.)

early days of carotid artery surgery is a fascinating tale of genius and determination.

EARLY DAYS OF CAROTID ARTERY SURGERY

It is interesting, when one reads about those pioneering days, that although Eastcott, Pickering, and Rob get the credit for the first successful carotid operation, it was actually done 3 years earlier by a team led by Raul Carrea (Carrea, Molins, and Murphy[5]), a neurosurgeon from Buenos Aires, Argentina. Carrea, however, did not report his case until 1955, when as the "*jefe*" of the *servicio neurocirugia*, he performed the first carotid-carotideal anastomosis. On September 17, 1951, he admitted a 41-year-old man who sustained a right hemiparesis, expressive aphasia, and loss of vision in the left eye. It did not escape Carrea's notice that this 41-year-old patient was married to a 22-year-old woman and that they had five healthy children. Could this have been a contributing factor to the patient's stroke? I guess we will never know.

A direct stick carotid arteriogram performed 1 week after admission identified a severe stenosis of the left internal carotid and, as Carrea described it, "a dorsal punched out defect."[5] We can only imagine what thoughts danced in Carrea's head a few days later in the operating room as he entered new and uncharted territory. Carrea described the operation:

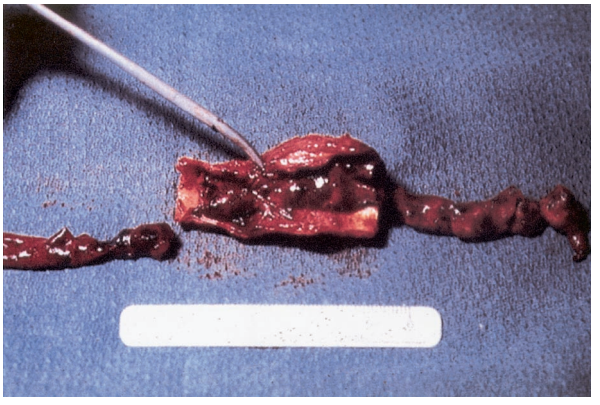

Fig 2. Thrombus removed from internal carotid artery.

> The internal carotid was cut about five millimeters above the abnormal area, the external carotid was also cut at the same level, and the proximal portion of the external carotid was anastomosed end-to-end to the distal portion of the internal carotid. Since the diameter of both arteries was almost equal, such a procedure could be carried out with ease.[5]

Carrea's team did a postoperative arteriogram and noted, "It was difficult to ascertain the location of the suture line"[5] (Fig 1). The authors concluded the manuscript by stating, "The indications and technique of this original procedure are described and the first successful treated case is presented."[5] Two months after admission, the apparently smiling patient was discharged to his 22-year-old wife. Carrea founded the Argentine Neurosurgical Association and the Institute for Neurological Research, which bears his name today. He died in 1978 at the age of 61 years.

The first English-language report of an *attempted* thromboendarterectomy, which appeared in 1953, is credited to Elliott Hurwitt, the chief of neurosurgery at Montefiore Hospital in New York City, and his associates (Strully, Hurwitt, and Blankenberg[6]). On a bone chilling day in mid January 1953, a 52-year-old man with headache and weakness on the right side of his face and right extremities who talked "nonsense" was admitted. Eight dreary days after admission, the patient underwent arteriography, which revealed a left internal carotid artery occlusion. On the 11th day after hospital admission, Hurwitt and company operated. The authors wrote:

> Two centimeters distal to the carotid bifurcation a longitudinal incision was made and a thrombus partially extruded itself. A number 10 French catheter was passed distally into the artery, toward the skull. *With suction applied* at all times, it was possible to remove seven centimeters of clot. Several attempts to remove the *intracranial* portion of the clot were unsuccessful and because of the danger of dislodging clot to the brain, the vessel was ligated.[6] (Fig 2.)

Addressing the New York Society of Neurosurgery, Hurwitt concluded, "Early diagnosis and removal of a

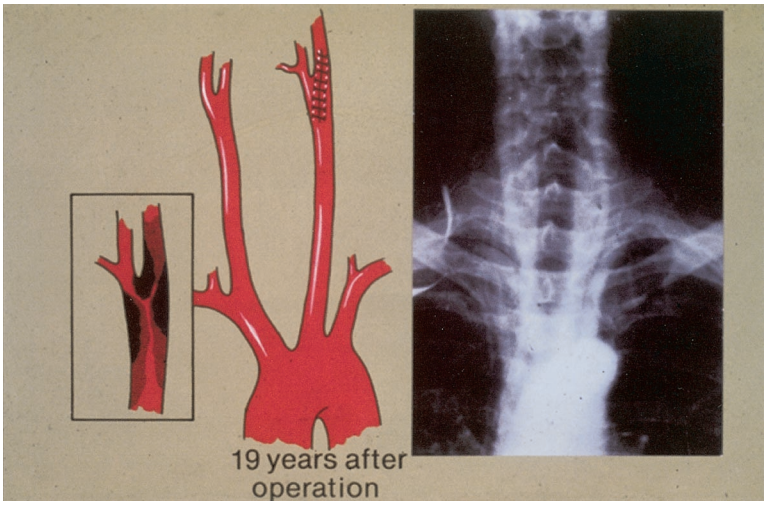

Fig 3. Diagrammatic representation of atheromatous lesion affecting carotid bifurcation. Arteriotomy repaired with continuous arterial silk. Arteriogram almost 4 years after operation shows patency of carotid arteries. (Reprinted with permission from JAMA 1975;233:1083-5.)

Fig 4. Felix Eastcott and Charles Rob, 1960. (Courtesy of Mrs Mary Rob.)

localized thrombus can probably result in reducing cerebral damage and prevent further insult caused by vascular insufficiency."[6] Hurwitt tragically died at age 53 years, in 1964, at the peak of his career. His death came as a shock to the medical world, as he was found in his office, slumped over his dictating machine. He had recently returned from a vacation in Africa, and friends surmised he had contracted a viral infection, developed endocarditis, and suffered a fatal arrhythmia.

In August 1953, 8 months after Hurwitt and colleagues' manuscript was published, Debakey[7] performed a successful carotid thromboendarterectomy; however, this case was not reported until 22 years later, in 1975. The patient was a 53-year-old bus driver with left hemispheric symptoms, and a presumptive diagnosis of internal carotid occlusion was made. Debakey wrote, "Accordingly, I discussed this projected surgical treatment with the patient and members of his family, indicating that, as far as I knew, this operation had *never* been successfully performed on a carotid artery, but that I had had considerable experience with its successful use for similar lesions in the legs."[7] At operation, an ulcerated plaque-producing severe stenosis with a fresh thrombus superimposed was found, and a thromboendarterectomy was performed. Eight days later, the patient left the hospital and went back to driving his bus. Debakey performed an angiogram nearly 4 years after the operation that showed both the common and the internal carotid arteries were patent (Fig 3). The patient died nearly 20 years after the operation from coronary artery disease.

Through the years, I have corresponded with Charles Rob and Felix Eastcott, both members of this Society, asking for their remembrances surrounding their first carotid operation. Before he passed away, Dr Rob wrote me:

> In the May of 1950, when I was 37 years old, I was appointed Professor of Surgery in the University of London at St. Mary's Hospital Medical School. At the time, Professor Pickering was Professor of Medicine and Felix Eastcott became my chief assistant It seemed to me that we needed to develop an entirely new line of surgery in that as atherosclerosis was the most common cause of death and disability in the developed countries of the western world, the treatment of this all too common disease would be a good field to enter (C. Rob, personal communication, 1997).

Fig 5. First successful reported carotid reconstruction. St Mary's Hospital, London, May 19, 1954. Eastcott is in *foreground* (back to camera). Rob stands to *right*. (Photo by George Dunlop.)

Eastcott and Rob were prepared to step into history, not by happenstance, but because of their perseverance, dedication, and commitment to their profession and to science (Fig 4). Rob had extensive experience with the vascular surgery treatment of war wounds, and he was certainly not short on guts. Indeed, during World War II, Rob was appointed as a Surgical Specialist to the First Parachute Brigade. He jumped into Tunisia in 1942 with his surgical team and was wounded in the leg but performed 20 operations under fire that day and was awarded Britain's Military Cross. Eastcott had dedicated his career to vascular surgery as well, having spent time in 1949 at Peter Bent Brigham Hospital in Boston, Mass, with Charles Hufnagel, learning the techniques of arterial reconstructive surgery.

A HECTIC DAY IN MAY

In March 1954, in London, Pickering consulted on a 66-year-old woman, Mrs Ada Tuckwell, "who presented in all, with 33 major attacks lasting from ten minutes to half an hour, in all of which there was loss of vision in the left eye, right hemiparesis and aphasia."[4] A direct left carotid stick arteriogram showed a short, tight stenosis of the proximal portion of the left internal carotid, with normal middle cerebral filling. Rob was asked to consult on Mrs Tuckwell, and the decision was made to attempt a surgical cure of her condition.

May 19, 1954, was a hectic day at St Mary's Hospital, wrote Eastcott:

> As it happened a cardiac surgery demonstration by Lance L. Bromley had been arranged to take place concurrently in the adjacent theater. So as to be able to look after visitors, Charles Rob delegated the carotid case to me, his Assistant Director at the time. I distinctly remember expressing grave concern about the risk of inducing a stroke during this operation, but Rob and Pickering took the other view that without treatment, this would surely happen anyway. Consequently, we went ahead the next day.[8]

May in England can be a cold month, so with the operating theater windows open, ice bags and cold sheets were placed over the patient to reduce her central core temperature. Eastcott said that the "same effect was soon noticed by the nursing staff and by several visitors who were present that day. In fact, you could almost hear the nurses' teeth chattering [H. H. G. Eastcott, personal communication, 2001]."

One of the visitors that day was George Dunlop of Worcester, Mass, who later became President of the American College of Surgeons and who took this memorable photograph (Fig 5). Eastcott is in the foreground with his back to the camera, performing the operation, and Rob is to the right. Eastcott wrote, "It was quiet in the operating room. I don't talk much when operating or playing the piano; some neurological exclusion factor I suppose, but Charles produced a few witticisms on this occasion (H. H. G. Eastcott, personal communication, 2001)."

Rob described the case:

> It was known that atherosclerosis focused on the carotid bifurcation and we planned to do a thromboarterectomy. However, the operation was more localized than we thought and so Felix Eastcott, the operating surgeon, and I resected the stenosis and established continuity with an end to end osteomosis [sic] of the common carotid to the internal carotid. The patient lived comfortably, free from any neurologic symptoms, for another 20 years until she succumbed to cardiovascular disease (C. Rob, personal communication, 1997).

After Eastcott's report (H. H. G. Eastcott, personal communication, 2001), the surgical treatment of carotid artery disease progressed rapidly. In 1956, Cooley, Al-Naaman, and Carton[9] published "Surgical treatment of arteriosclerotic occlusion of common carotid artery,"[9] in

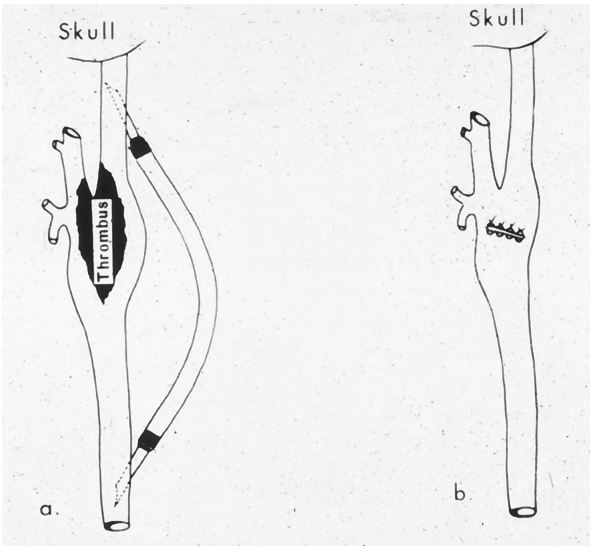

Fig 6. Drawing shows **(A)** bypass shunt around occluded segment and **(B)** location of arteriotomy. (Reprinted with permission from J Neurosurg 1956;13:500-6.)

which they offered the first method of cerebral protection during carotid artery surgery. As they reported, on March 8, 1956, after "cooling of the cranium and brain was attempted by immersing the head in crushed ice,"[9] a 71-year-old man underwent successful carotid endarterectomy. Cooley's team used a polyvinyl "external shunt," which was inserted with 14-gauge needles, above and below the carotid plaque, and "was used to bypass the carotid circulation during the period of occlusion"[9] (Fig 6). They concluded the manuscript by stating, "The combination of external shunts plus hypothermia offers the maximum protection of the brain during operation on the carotid artery and should be considered the method of choice."[9]

ONE MILE, FOUR MINUTES

This series of events, led by Robb and Eastcott, forever changed vascular surgery, much as Roger Bannister's amazing feat forever changed the way we look at physical barriers in athletic competition. The elements were elemental—1 mile, 4 minutes. For the longest time, perhaps forever, few believed a man could run a mile in less than 4 minutes, and, indeed, many experts of the era believed it was humanly impossible.

Bannister knew that 1954 would be his last competitive season, as he was leaving medical school and beginning his "house officer" training in the autumn of 1954 and, by coincidence, at St Mary's Hospital on Pickering's medicine service (R. Bannister, personal communication, 2000). With that in mind, in early 1954, Bannister immersed himself in an incredibly rigorous training regimen, running several times a week a series of 10 consecutive quarter miles, each on the 2-minute mark. By April, Bannister could manage 10 consecutive quarter miles in 61 seconds, but however hard he tried, it seemed impossible to reach his target of 60 seconds.

Bannister and his training partners, Chris Brasher and Chris Chataway, decided they were feeling bogged down and took a weekend off, hiking in Scotland. On Bannister's return, he ran 10 consecutive quarters in 59 seconds apiece! Bannister had trained intensely for 8 months, and as his moment approached, he hardly knew what to do with himself. On May 6, 1954, Bannister went to the hospital at 11:00 am, and while sharpening his running spikes on a grindstone in his laboratory, a passerby asked, "You don't really think that's going to make a difference do you?"[10]

As Bannister traveled to Oxford, the weather was awful. Miserable rain showers, gray skies, and blustery winds cast a pall over the landscape. Bannister's chances of success were more than dampened, but the elements underestimated the man. As he rode the train, he focused on the events of the afternoon. He wrote:

> In my mind I had settled this as the day when, with every ounce of strength I possessed, I would attempt to run the four-minute mile. I had reached my peak both physically and psychologically. There would never be another day like it. This was my first race in eight months and all this time I had been storing nervous energy.[10]

At 5:00 pm, there was a shower of rain and the wind diminished slightly. Failure is as exciting to watch as success, provided the effort is absolutely genuine and complete. Bannister's perseverance, dedication, and commitment had brought him to this moment. As he approached the starting line, he turned to his mates and said, "It's on!" There was complete silence, and when the gun fired, Bannister ran effortlessly, as if propelled by some unknown force. Bannister was impatient and shouted, "Faster!" but the pacesetter, Brasher, kept his head and did not change the pace. They passed the first lap in 57.5 seconds, and Bannister stayed on Brasher's shoulder. Bannister later recalled:

> I barely noticed the half-mile which passed in one minute fifty-eight seconds, nor when, around the next bend, Chris Chataway went into the lead. At three-quarters of a mile the effort was still barely perceptible and the time was three minutes—seven tenths of a second now the crowd was roaring! Somehow I had to run the last lap in fifty-nine seconds. Chataway lead [sic] around the next bend and then I pounced past him 100 meters from the finish.[10]

He continued:

> I felt that the moment of a lifetime had come. There was no pain, only a great unity of movement and aim. The world seemed to stand still, or did not exist. The only reality was the track under my feet. Those last few seconds seemed never ending. I leapt at the tape like a man taking his last spring to save himself from the cavisim that threatens to engulf him [Fig 7]. My effort was over and it was only then that the pain overtook me. I had no will to live, but I knew I had done it before I even heard the time. I was too close to have failed. The

Fig 7. Roger Bannister breaks 4-minute mile. Oxford, England, May 6, 1954. (Reprinted with permission from Getty Images.)

stop watches held the answer. The announcement came: 'Result of one mile time three minutes' the rest was lost in the roar of excitement (R. Bannister, personal communication, 2000).

In that wonderful moment of joy, Bannister knew no pain—only the ecstasy of having achieved what no man had done before him and what so many thought was impossible. Bannister now owned a place in history where none had ever ventured, secure for all time, however fast men might run miles in the future. Bannister became a national hero and a legend in Great Britain, and in America, he became *Sports Illustrated*'s first "Sportsman of the Year" in 1955 (Fig 8).

HISTORY LEAPS FORWARD

History, ladies and gentlemen, leaps forward on the backs of extraordinary individuals who dare to dream and who pursue their dreams with perseverance, dedication, and commitment. These are the building blocks that make a world-class athlete and a world-class surgeon.

In closing, I address my remarks to those in this room with less gray hair than I. To the young men and women starting your careers, and to those who are still in training, never forget that medicine is the most noble calling and extraordinary journey you can pursue. The deep, truly personal satisfaction that comes with patient care and helping others should be at the core of your life.

To you, the next generations, and to my sons, I counsel you to never lose the sense of wonder seen through the child's eye. Pursue your dreams and never be afraid to fail, for the only man who has never failed is the man who has never tried. There are no boundaries you cannot overcome with vision driven by perseverance, dedication, and commitment.

Fig 8. Cover of first issue of *Sports Illustrated*, Jan 3, 1955. "Roger Bannister: Sportsman of the Year." (Reprinted with permission from Sports Illustrated, 1955.)

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REFERENCES

1. Dos Santos JC. Surla desobstruction des thromboses arterieles anciennes. Mem A Cad Chir 1947;73:409-11.
2. Dubost C, Allary M, Oeconomos N. Resection of an aneurysm of the abdominal aorta: reestablishment of the continuity by a preserved human arterial graft, with result after five months. Arch Surg 1952;64:405-8.
3. Parodi JC, Palmaz JC, Barone HD. Transfemoral intraluminal graft implantation for abdominal aortic aneurysms. Ann Vasc Surg 1991;5: 491-9.
4. Eastcott HHG, Pickering GW, Rob CG. Reconstruction of internal carotid artery in a patient with intermittent attacks of hemiplegia. Lancet 1954;2:994-6.
5. Carrea R, Molins M, Murphy M. Surgical treatment of spontaneous thrombosis of the internal carotid artery in the neck: carotid-carotideal anastomosis. Acta Neurol Latinoamer 1955;1:71-8.
6. Strully KJ, Hurwitt ES, Blankenberg HW. Thrombo-endarterectomy for thombosis of the internal carotid artery in the neck. J Neurosurg 1953;10:474-82.
7. Debakey ME. Successful carotid endarterectomy for cerebrovascular insufficiency. JAMA 1975;233:1083-5.
8. Rob C. Personal communication. 1997.
9. Eastcott HHG. The beginning of stroke prevention by surgery. Cardiovasc Surg 1994;2:164-70.
10. Eastcott HHG. The beginning of stroke prevention by surgery. Cardiovasc Surg 1994;2:164-70.
11. Cooley DA, Al-Naaman YD, Carton CA. Surgical treatment of arteriosclerotic occlusion of common carotid artery. J Neurosurg 1956;13: 500-6.
12. Bannister R. The four-minute mile. New York: Lyons & Burford; 1955.

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